

The Solid State Energy Conversion Alliance: A Paradigm Shift in Technology Development



**Solid State Energy Conversion
Alliance Workshop**

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The Vision: *Fuel Cells in 2010*



**Low Cost
\$400/kW**

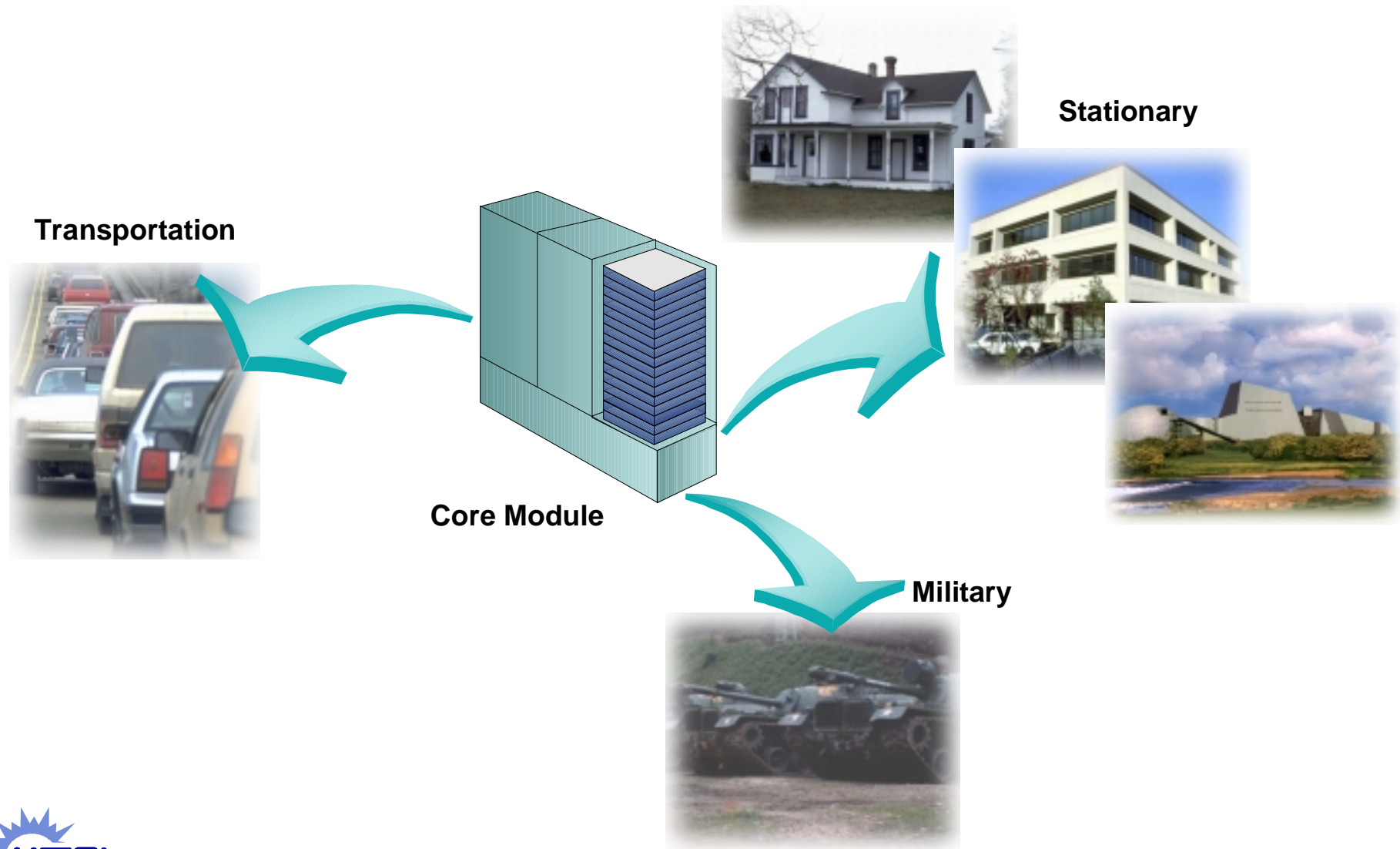


Multiple Fuels



Reduced CO₂ Emissions

The Vision: *A Core Module for Multiple Applications*

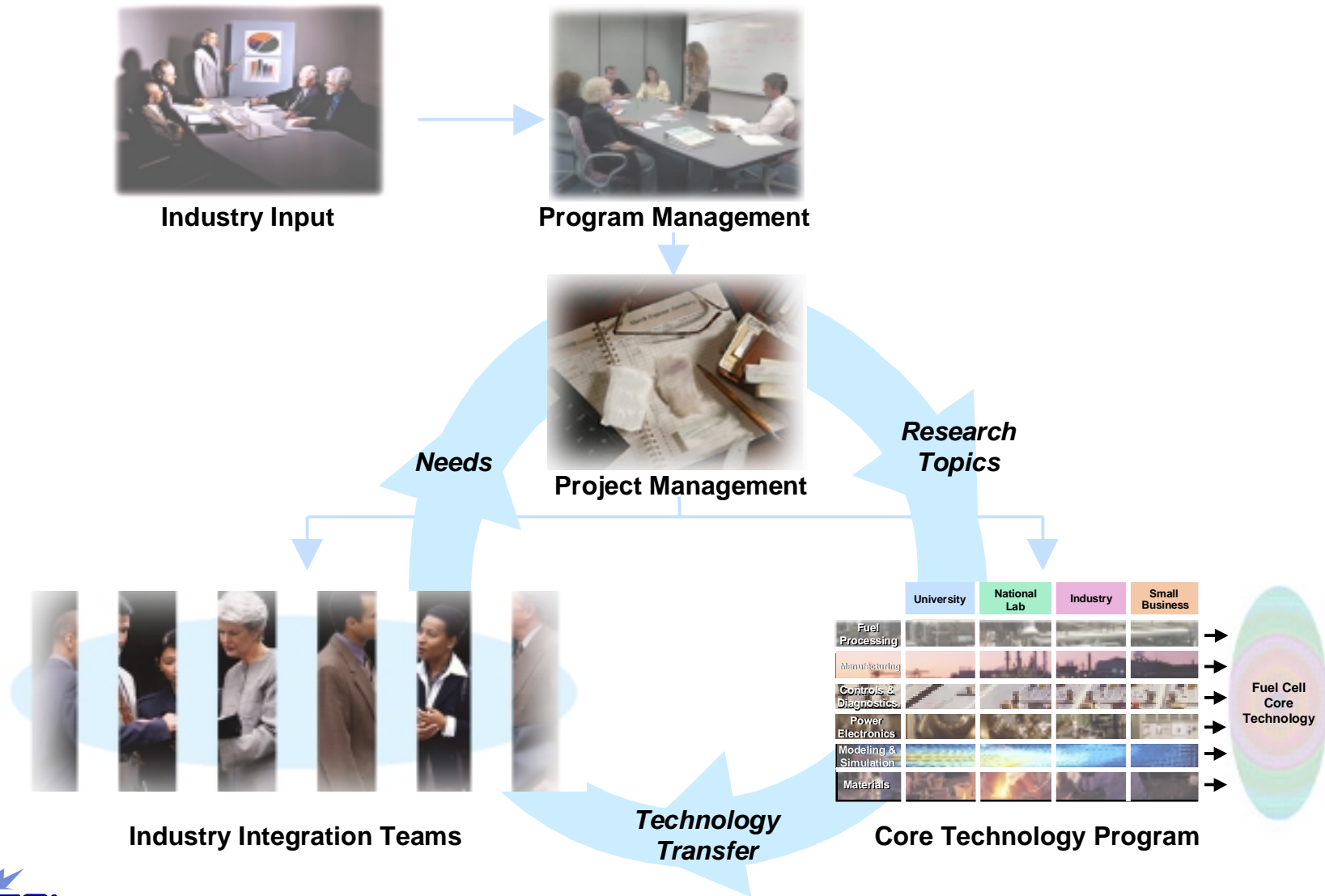


SECA - Realizing the Vision

SECA:

- **An alliance of industry teams, R&D performers, and government funding organizations**
- **Develops an integrated strategy**
- **Focuses research**

SECA Structure



Industry Integration Teams

The Manufacturing Base

Multiple Integration Teams

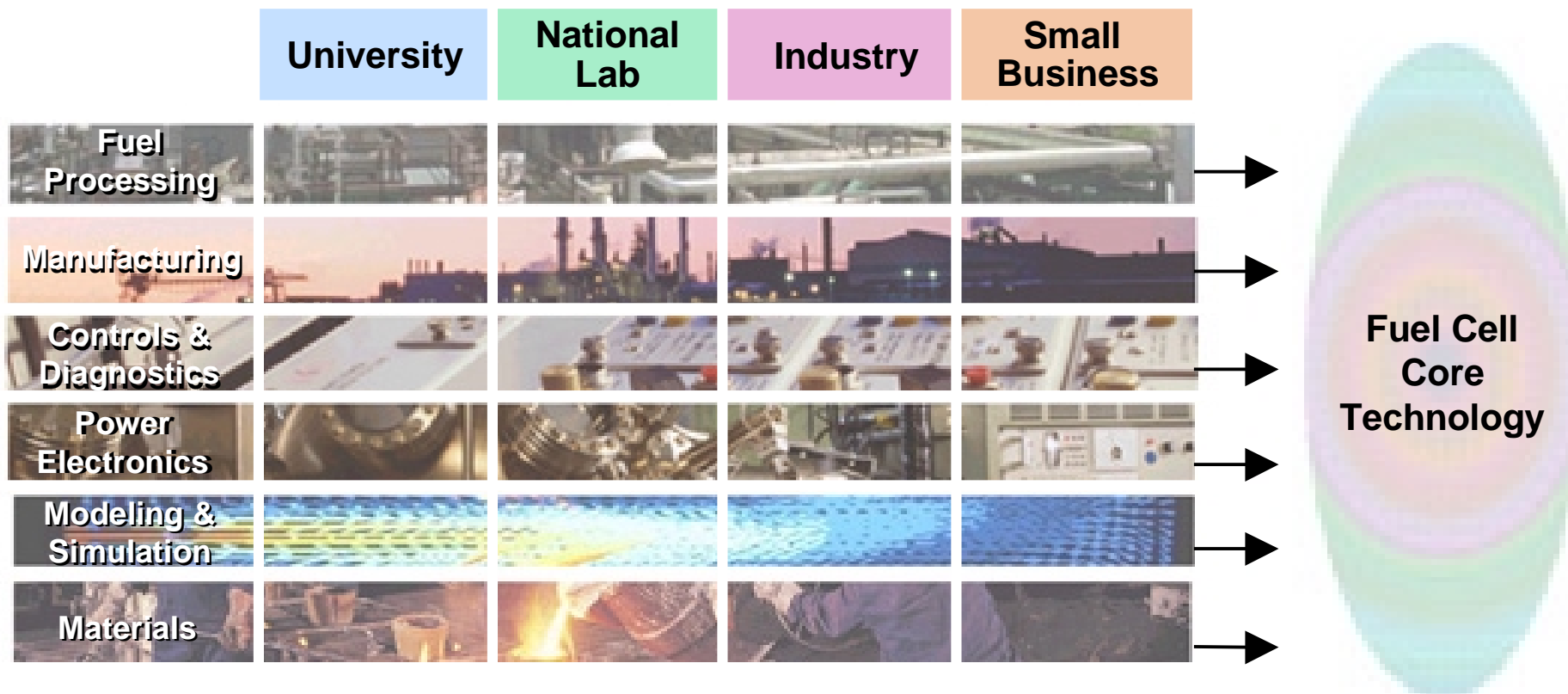


**Mass Customization
of Common Modules**



Core Technology Program

The Technology Base



Intellectual Property - Cornerstone of the Alliance

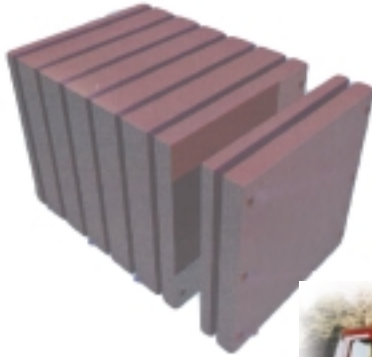


Solid State - The Choice for the New Millennium

- **Inherently high efficiency**
- **Couples with high-temperature reforming**
- **Simple and efficient heat removal designs**
- **Low-cost manufacturing**



- Now is the Time



- Breakthrough in materials, designs, and manufacturing
- Market forces
- Environmental concerns

Status of the Market

Stationary



- Major market penetration requires cost \leq \$400/kW
- Breakthrough technologies needed to reduce costs
- Environmental concerns driving DG to very clean systems

Status of the Market

Transportation



- Potentially low system costs operating on available fuels
- Adaptable to standard transportation fuels
- High efficiencies
- Low emissions

Status of the Market

Military



- Requires high efficiency, low signature power systems
- Fuel logistics are critical
- Electric drives/field power increasingly important

A Paradigm Shift

Overcoming the Pull of The Past

**Cleaner, more
efficient way to use
fossil fuels**



**Start with the
end in mind**

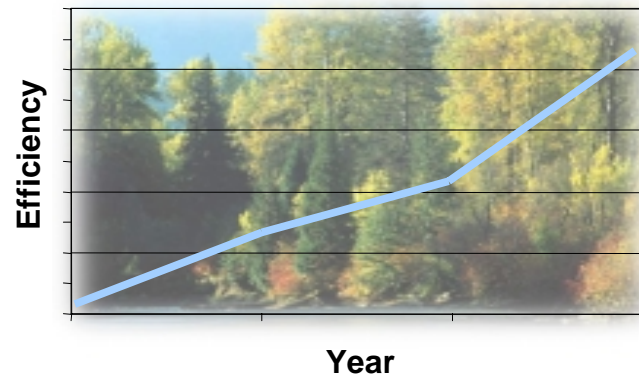


**Adopt principles
of contemporary
system design**

**Industry cooperating
across traditional lines**

Public Benefits

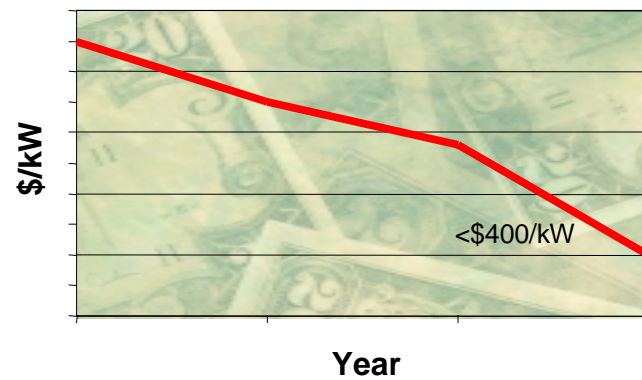
High Efficiency



Grid Stability



Cost Reduction



Responding to the Needs of the Nation

“Mass customization of fuel cell components for stationary, mobile, and military applications can lead to mass manufacturing and in turn, to much lower unit costs.”

Bob Gee, Assistant Secretary for Fossil Energy



Responding to the Needs of the Nation

